

(3)

Metal Science Journal

VOLUME 5

1971

EDITOR

J. S. BRISTOW, B.Sc., F.I.M.

*The right of publication and of translation is reserved.
The Trust is not responsible for the statements made
or for the opinions expressed in the following pages.*



Published by

THE INSTITUTE OF METALS in association with
THE IRON AND STEEL INSTITUTE
for the Metals and Metallurgy Trust
of THE INSTITUTE OF METALS and
THE INSTITUTION OF METALLURGISTS

Contents

	PAGE
MS 201 The High-Temperature Ductility of Some Low-Alloy Ferritic Steels. By R. Pilkington, G. Willoughby, and J. Barford	1
MS 202 The Initial Stages of Spinodal Decomposition in a Cu-Ni-Fe Alloy Studied by Electron Microscopy. By E. P. Butler	8
MS 203 The Influence of Alumina Dispersions on the Diffusion-Creep Behaviour of Polycrystalline Copper. By B. Burton	11
MS 204 The Surface Energy of Solid Metals. By H. Jones	15
MS 205 The Influence of Ultrasound on the Kinetics of Recrystallization in Copper. By G. A. Hayes and J. C. Shyne	19
MS 206 The Computer Calculation of Phase Boundaries from Thermochemical Data. By B. Gale and J. M. Davis	25
MS 207 Effect of Structure on Creep Strength of a Low-Alloy Cr-Mo-V Steel. By J. Barford and G. Willoughby	32
MS 208 The Heats of Formation in the System Gold-Platinum-Palladium. By F. H. Hayes and O. Kubaschewski	37
MS 209 The Influence of Stacking-Fault Energy on the Creep Behaviour of α -Brasses. By J. Hedworth and G. Pollard	41
MS 210 The Effect of Boundary Precipitates on the High-Temperature Fatigue Strength of Austenitic Stainless Steels. By J. H. Driver	47
MS 211 Deformation Processes in the Intermediate Phase NiAl. By R. T. Pascoe and C. W. A. Newey	50
MS 212 Size-Distribution Effects in the Precipitation of Inert-Gas Bubbles in Solids. By A. J. Markworth and E. M. Baroody	55
MS 213 The Low-Cycle Fatigue Behaviour of Copper at Elevated Temperatures. By G. Wigmore and G. C. Smith	58
MS 214 The Influence of Matrix/Particle Cohesive Bond Strength on the Internal Necking Mechanism of Ductile Fracture. By P. F. Thomason	64
MS 215 The Microcracking Behaviour of Textured Rimming Steel at 77 K. By T. H. Webster, R. E. Smallman, and I. L. Dillamore	68
MS 216 The Deformation and Fracture Behaviour of Textured 3½% Silicon Irons at 77 K. By T. H. Webster, I. L. Dillamore, and R. E. Smallman	74
MS 217 Widmanstätten Precipitation from Non-Ideal Solid Solution: α in β -CuZn. By Gary R. Purdy	81
MS 218 Influence of Anodic Layers on Fatigue-Crack Initiation in Aluminium. By George A. Beitel and C. Quinton Bowles	85
MS 219 The Shape-Memory Effect in a Titanium-35 wt.-% Niobium Alloy. By C. Baker	92
MS 220 Internal-Friction Study of Recrystallization in Pure Iron and Its Dilute Alloys. By A. Lucci and C. Antonione	100
MS 221 The Effect of Hydrostatic Pressure on the Shrinkage of Cavities in Metals. By W. B. Beeré and G. W. Greenwood	107
MS 222 Precipitation Characteristics of Aluminium-Lithium Alloys. By B. Noble and G. E. Thompson	114
MS 223 Mechanism and Transformation Kinetics of the Alpha \rightarrow Sigma Phase Transformation in Iron-Vanadium Alloys. By W. J. Kitchingman and G. M. Bedford	121
MS 224 Some Effects of Environment and Frequency on the Fatigue Properties of an Age-Hardening Aluminium Alloy. By B. S. Hockenhull and H. A. Monks	125
MS 225 A Preliminary Field-Ion Microscope Study of Precipitation and Particle Coarsening in Fe-12% Au. By A. Youle, D. M. Schwartz, and B. Ralph	131
MS 226 The Effects of Prior Transformation and Prestrain on the Habit Planes of Acicular Iron-Nickel Martensite. By T. Bell and R. G. Bryans	135
MS 227 The Metallography of Fatigue Cracks Initiated at Notches in an Al-0.5% Mg Alloy. By M. A. Wilkins and G. C. Smith	139
MS 228 The Interaction of Long-Range Order and Deformation Processes in Cu ₃ Au Polycrystals. By I. L. Dillamore and N. S. Stoloff	145
MS 229 The Influence of Mean Stress on Fatigue-Crack Propagation in a Ferritic Weld Metal. By J. R. Griffiths, I. L. Mogford, and C. E. Richards	150
MS 230 A Determination of the Vacancy/Solute Atom Binding Energy in Aluminium-Silicon from Dislocation-Loop Annealing. By R. L. Peck and K. H. Westmacott	155
Discussion: The Kinetics of Mo ₂ C Precipitation in Tempered Martensite	160
MS 231 Dislocation Precipitation in γ' -Forming Steels. By D. Raynor	161
MS 232 The Transformation Behaviour of Low-Carbon Iron-Manganese Alloys. By J. D. Bolton and E. R. Petty	166
MS 233 The Effect of Temperature on the Fatigue Response of Alpha-Titanium. By D. I. Golland and C. J. Beavers	174
MS 234 Some Observations on Fatigue in Copper Single Crystals. By C. R. Gostelow	177
MS 235 Resistance Changes in Iron-Base Alloys Forming Ni ₃ (Al Ti) Precipitates. By J. M. Silcock	182
MS 236 Martensite Transformations in an Fe-Ni-Cr Alloy. By W. K. C. Jones and A. R. Entwistle	190
MS 237 A Void Model for Hydrogen Diffusion in Steel. By B. Chew	195
MS 238 Textures in the Superplastically Deformed Tin-Lead Eutectic Alloy. By C. P. Cutler and J. W. Edington	201
MS 239 The Influence of Oxidation on the High-Temperature Tensile Creep of Iron. By R. R. Hough and R. Rolls	206
MS 240 An Original Method for the Determination of Equilibrium Diagrams in Multicomponent Systems by Means of a Digital Computer. By J. F. Counsell, E. B. Lees, and P. J. Spencer	210
MS 241 Crack Propagation after Prestrain and Ageing in 3½% Silicon Iron Single Crystals. By R. Pilkington and D. Hull	214
MS 242 Short-Range Order and the Nucleation of Long-Range Order in Ni-Rich Nickel-Niobium Alloys. By C. J. van der Wekken, R. Taggart, and D. H. Polonis	219
MS 243 The Effect of Indium on Dislocation-Loop Annealing in Aluminium. By J. Burke and T. R. Ramachandran	223
MS 244 The Effect of Solute Interchange on the Martensitic Transformation in the 52.5 at.-% Au-Cd Alloy. By M. Jovanović, M. E. Brookes, and R. W. Smith	230
MS 245 The Influence of Grain Size and Certain Precipitate Parameters on the Creep Properties of Ni-Cr-Base Alloys. By T. B. Gibbons and B. E. Hopkins	233